National Institute of Environmental Health Sciences

Associations between weather conditions and clinical symptoms in patients with hip osteoarthritis: A 2-year cohort study

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Abstract:

The goal of this study was to assess whether there is an association between ambient weather conditions and patients' clinical symptoms in patients with hip osteoarthritis (OA). The design was a cohort study with a 2-year follow-up and 3-monthly measurements and prospectively collected data on weather variables. The study population consisted of 222 primary care patients with hip OA. Weather variables included temperature, wind speed, total amount of sun hours, precipitation, barometric pressure, and relative humidity. The primary outcomes were severity of hip pain and hip disability as measured with the Western Ontario and McMasters University Osteoarthritis Index (WOMAC) pain and function subscales. Associations between hip pain and hip disability and the weather variables were assessed using crude and multivariate adjusted linear mixed-model analysis for repeated measurements. On the day of questionnaire completion, mean relative humidity was associated with WOMAC pain (estimate 0.1; 95% confidence interval Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.0-0.2; P Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin).02). Relative humidity contributed ≤1% to the explained within-patient variance and between-patient variance of the WOMAC pain score. Mean barometric pressure was associated with WOMAC function (estimate 0.1; 95% confidence interval Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin) 0.0-0.1; P Euro Surveillance (Bulletin Europeen Sur Les Maladies Transmissibles; European Communicable Disease Bulletin).02). Barometric pressure contributed ≤1% to the explained within-patient variance and between-patient variance of the WOMAC function score. The other weather variables were not associated with the WOMAC pain or function score. Our results support the general opinion of OA patients that barometric pressure and relative humidity influence perceived OA symptoms. However, the contribution of these weather variables (≤1%) to the severity of OA symptoms is not considered to be clinically relevant.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Meteorological Factors, Meteorological Factors, Precipitation, Solar Radiation, Temperature

Temperature: Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : Netherlands

Health Impact:

specification of health effect or disease related to climate change exposure

Other Health Impact

Other Health Impact: hip osteoarthritis

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified